

REMARKS

This is a full and timely response to the final Office action mailed May 2, 2007. Reexamination and reconsideration in view of the foregoing amendments and following remarks is respectfully solicited.

Claims 1-6, 8-15, and 17-35 are pending in this application. Claims 36-71 were previously canceled. The Applicants thank the Examiner for allowing claims 10-15 and 17-35. The Applicants also thank the Examiner for finding allowable subject matter in claim 8. Accordingly, claim 8 has been amended to incorporate all of the limitations of its base claim (independent claim 1). No new matter is believed to have been added.

Rejections Under 35 U.S.C. § 103

Claims 1-6 and 9 are rejected as being unpatentable over U.S. Patent No. 6,733,908 to Lee (Lee '908) in view of U.S. Patent No. 6,207,295 to Stowell (Stowell). The Office action alleges that Lee '908 teaches a silicon based substrate and an outer coating, but "is silent as to the composition of the environmental barrier and thermal barrier layers". The Office action further alleges that Stowell makes up for these deficiencies, that it teaches a "a thermal barrier coating comprising alternating outer layers of Ta2O5 and SiO2," and that "the multilayer coating is considered to meet the limitations of applicant's claimed environmental and thermal barrier layers". See May 2, 2007 Office action pages 2-3. The Applicants respectfully disagree.

First, nowhere is there any teaching of a protective barrier coating that includes a metal disilicate-containing oxidation barrier coating (16), and an environmental barrier coating (20) that includes tantalum oxide or an alloy thereof formed over the oxidation barrier (16), as recited in Claim 1. Instead, Lee '908 teaches that monosilicates and disilicates may be in an outer chemical barrier layer 22, see col. 7, ll. 37 to 50, but does not teach the inclusion of Ta2O5 in an environmental barrier coating. Stowell teaches an outer coating made of thin alternating layers of Ta2O5 and monosilicates, but does not teach a protective

barrier coating that includes a metal disilicate and an oxidation barrier that includes tantalum oxide.

Additionally, in contrast to the allegations made in the Office action, nowhere is there any suggestion to modify Lee '908 to incorporate the teachings of Stowell. In particular, Lee '908 teaches a multi-layer system that includes a substrate 12, a bond layer 18, a mullite-containing layer 20, an outer chemical barrier layer 22, an optional mullite inner chemical barrier layer 24, and a YSZ outer layer 14. See id. What may be referred to as the "multi-layer coating" of Lee may include at least the mullite-containing layer 20, the outer chemical barrier layer 22, and a YSZ outer layer 14, see col. 6, ll. 18-28, and is taught to have a minimum total thickness of 75 microns. Although Stowell teaches having alternating layers of Ta₂O₅ and SiO₂, it teaches that the "total outer coating [has a] thickness in the range of 2.5-25 microns." See col. 3, ll. 37-39. In addition, Stowell specifically teaches against a thickness of greater than 25 microns and states that "a total outer portion thickness of greater than 25 microns resulted in film stresses sufficiently high to result in spalling of the outer coating portion as a result of the cyclic operating conditions of the hot operating turbine section of a gas turbine engine." See col. 3, lines 58-61.

Examiner is well aware of the three basic criteria necessary to establish a prima facie case of obviousness. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. Second, there must be a reasonable expectation of success, and third, the prior art reference or references must teach or suggest all the claim limitations. The teaching or suggestion to make the combination and the reasonable expectation of success must both be found in the prior art, and not based on Applicants' disclosure. In *Re Vacck*, 947 Fed. 2d 488, 20 USPQ 2d, 1438 (Fed. Cir. 1991). Here, the references do not teach each and every element of the claims and there is no suggestion to modify or combine the references. Accordingly, the Applicants respectfully request withdrawal of the rejections.

Conclusion

In view of Applicants' amendments and remarks, it is respectfully submitted that Examiner's objections and rejections have been overcome. Accordingly, Applicants respectfully submit that the application is now in condition for allowance, and such allowance is therefore earnestly requested. Should the Examiner have any questions or wish to further discuss this application, Applicants request that the Examiner contact the Applicants attorneys at the below-listed telephone number. If for some reason Applicants have not requested a sufficient extension and/or have not paid a sufficient fee for this response and/or for the extension necessary to prevent abandonment on this application, please consider this as a request for an extension for the required time period and/or authorization to charge Deposit Account No. 50-2091 for any fee which may be due.

Respectfully submitted,

INGRASSIA FISHER & LORENZ

Dated: June 25, 2007

By: /CINDY H. KWACALA, REG. NO. 47667/

Cindy H. Kwacala
(480) 385-5060